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## BOOK REVIEWS

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### DER KLUGE HANS AND THE ELBERFELD HORSES

(1.) *Clever Hans, the Horse of Mr. Von Osten*; a contribution to experimental animal and human psychology by OSCAR PFUNGST, with an introduction by Prof. C. Stumpf, one illustration and fifteen figures, translated from the German by CARL L. RAHN, Fellow in Psychology in the University of Chicago, with a prefatory note by James R. Angell, Professor of Psychology in the University of Chicago. New York. Henry Holt and Co., 1911. Pp. vii, 274.

(1.) In the comparative psychology of horses everything dates from Pfungst's study of *der kluge Hans*, first published in full in 1907 and reviewed in this *Journal*, Vol. XIX, p. 422. The case was that of a stallion which seemed to have acquired, as the result of patient teaching by methods similar to those used in primary schools, a fairly human mental outfit, including among other things a very considerable comprehension of language both spoken and written and powers of abstract thought sufficient for arithmetical calculations. The reports of his performances excited great popular interest in Berlin and other German cities, and aroused no small controversy. He was examined first by a large general commission of distinguished gentlemen of Berlin and finally by a small committee of experimental psychologists of which Prof. Stumpf of the University of Berlin was the most distinguished member, and Dr. Oscar Pfungst of his laboratory the active investigator. The result of Pfungst's study was what appeared to be a complete demonstration that the creature had no unusual powers in language and did no abstract thinking but responded wholly to unconscious movements on the part of the questioner. The work was eminently worth translating, not only as a classic of animal psychology, but for the valuable cross-lights which it throws upon many occult phenomena of human experience. Mr. Rahn's translation is admirably idiomatic and readable, but suffers perhaps a trifle from an excess of this virtue in that the renderings are occasionally a trifle too free. The most serious error which the reviewer has noticed, however, is probably a mere slip of the pen. On p. 145, line 7, the translation reads "with knowledge" and the original (p. 103, line 4, from the foot of the page) "without knowledge."

(2.) *Denkende Tiere, Beiträge zur Tierseelenkunde auf Grund eigener Versuche*, von KARL KRALL. *Der Kluge Hans und meine Pferde* Muhamed und Zarif. 2te unveränderte Auflage mit Abbildungen nach eigenen Aufnahmen. Leipzig, 1912. Verlag von Friedrich Engelmann. Pp. v, 538.

(2.) The results of Pfungst were so convincing, even when published in abstract in 1904, that popular interest in Hans fell away entirely, and when Pfungst's book appeared in 1907 the supporters of the opposite view were, for the time at least, effectually silenced. The owner of Hans, Herr von Osten, was not convinced, however, nor was Herr Krall, of Elberfeld, who had followed the controversy

in the newspapers and had visited Berlin in the summer of 1905 to see the horse for himself. What he saw and the experiments which he himself made with Hans at intervals during the next three or four years settled him firmly in the conviction that, in spite of all scientific applause Pfungst was wrong and that Hans definitely did his own thinking. Later Krall purchased two Arabian stallions, Muhamed and Zarif, trained them himself by improved methods and secured phenomena far more striking than any obtained with Hans. These results, together with other matters bearing on the general question he has now embodied in the work before us and thus reopened the whole controversy.

It is inevitable that most psychologists, especially those who have devoted themselves to animal psychology, should appear among the skeptical or even among the opponents of Krall's views, but no one can examine the book that he has produced without feeling profoundly indebted to him for the care with which he has gathered all obtainable information about Hans, for the lavish illustrations by which he makes the reader almost a spectator of what he describes, and for his costly experiments which must remain a contribution of lasting value to human and animal psychology, whatever may be the ultimate fate of his interpretation of their outcome. His work is and will remain a "document" of great importance.

Krall presents his material in five main sections. The first (83 p.) deals briefly with the history of Hans and at greater length with tests of his senses and intelligence carried out by Krall in co-operation with von Osten. The second (88 pp.) reports Krall's work with Muhamed and Zarif, his methods of teaching, the supposed spontaneous attempts of the horses at communication and the efforts of the experimenters to facilitate them, and finally with the results of experiments made without knowledge on the part of the questioner (or of others present) as to the answers which ought to be given by the horses. The third part (74 pp.) gathers up the experience of Krall and others on horse education, particularly as regards responsiveness and temperament, with an added discussion on the extent to which animals comprehend and can make use of vocal speech. Following this section comes a statement of conclusions and upwards of 30 pages of painstaking notes touching matters treated in the previous sections. The fourth and fifth sections are appendices and handle in greater detail the subjects considered in the first two sections. The fourth (171 pp.) gives the history of von Osten's efforts in horse education begun in 1888 with an earlier Hans and recommenced in 1900 with the Hans known to fame. From the year 1904 when the later Hans came to public notice the chronicle is as full as industry and a quasi-religious devotion can make it. Extracts from the protocol of Krall's experiments with Hans fill the last 30 pages. The fifth section (50 pp.) gives a similar, though briefer, history of the training of Muhamed and Zarif, accompanied also by transcripts from the protocol. Twenty odd pages of notes again, a full index and a reproduction of several pages of manuscript in the hand of von Osten, conclude the work. Just before the index the author announces in cryptogram, after the manner of the earlier scientists, certain results which constitute the basis for work upon which he is still engaged. The book carries as frontispiece a heliotype portrait of von Osten, and in the course of the work there are two other portraits, besides many cuts of experiments in progress in which he appears as a participant. Besides these there are eight

full-page plates and over 150 illustrations, mostly half-tone reproductions from photographs of the author's own taking.

An adequate account of the contents of these sections would require much more space than is here allowable, but it may be said in general that Krall is evidently interested in no small measure in the ethical and other general implications of his findings, and it may be safely conjectured that he is more interested in getting results than in submitting them to critical analysis and confirmation. It is significant that though he made more than 12,000 separate tests with Hans, and probably has made many more than that number with his own horses, there are no statistical tables in his book, nor do the extracts from his protocols give any evidence that his experiments were arranged like those of Pfungst to test the effect of the presence or absence of special conditions.

A brief account of the more striking feats of Krall's horses and a summary of his rather unconvincing arguments against Pfungst's first conclusion—the dependence of the horse upon his questioner—will be found in the article upon Hans and the Elberfeld Horses in the body of this number of the *Journal*. It will be sufficient to say here that Krall seems to make out a pretty good case against the control of the horses by unconscious minimal movements serving as visual signals. As the affair now stands science has no certain explanation to offer; nor is it required to offer any explanation in advance of facts which make some one explanation inevitable. Krall has produced a magnificent problem, but, in the reviewer's judgment, no solution of it.

(3.) *Les Chavaux savants d'Elberfeld*, par M. ED. CLAPARÈDE. *Archives de Psychologie*, XII, 1912. 261-304.

(3.) To most psychologists a report of the first-hand observations upon the Elberfeld horses by a psychologist of Claparède's standing will carry great weight. Such a report forms the core of the article before us. Claparède was present at four seances with the horses in August, 1912, and was so far impressed as to place on formal record his conviction (p. 303) that correct answers were given by the horses under conditions which exclude absolutely the hypothesis of voluntary or involuntary signs and his impression that the horses both really counted the taps given and spelled on their own account, though he reserves his decision as to the manner in which they reach so rapidly the results of their mathematical calculations.

What Claparède himself saw concurs in the main—in what might be called the standard performances of the horses—with what is reported by Krall. He describes his general impression as at first unfavorable and even at the end somewhat mixed. When, in reply to a request that the horses be given some very simple problems, he is told that simple problems bore them since they have become accustomed to more complex ones, he is left in much doubt. Why should not the horses be willing, for the sake of the carrots for which they work, to bear a trifle of ennui? But if they were intentionally controlled why should there be hesitation to submit them to simple tests?

In the latter part of his paper Claparède reviews the hypotheses which he regards as possible, five in number: 1, Fraud; 2, Involuntary signals; 3, Telepathy or an unknown sense; 4, True intellectual powers; 5, A combined hypothesis. The first three and the last of